



SEQLIST.TXT

SEQUENCE LISTING

<110> Smithkline Beecham Biologicals s.a.
Bollen, Alex
Bruck, Claudine
Jacobs, Paul
Massaer, Marc

<120> Recombinant Allergen with Reduced Enzymatic Activity

<130> B45122

<140> US 09/554,860

<141> 2000-05-19

<150> PCT/EP98/07521

<151> 1998-11-16

<150> GB9724531.0

<151> 1997-11-19

<160> 31

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 320

<212> PRT

<213> Artificial Sequence

<220>

<223> Recombinant mutant Der p1 including pre-protein -
Cys 132 to Ala 132

<400> 1

Met	Lys	Ile	Val	Leu	Ala	Ile	Ala	Ser	Leu	Leu	Ala	Leu	Ser	Ala	Val	
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Tyr	Ala	Arg	Pro	Ser	Ser	Ile	Lys	Thr	Phe	Glu	Glu	Tyr	Lys	Lys	Ala	
			20					25					30			
Phe	Asn	Lys	Ser	Tyr	Ala	Thr	Phe	Glu	Asp	Glu	Glu	Ala	Ala	Arg	Lys	
		35					40					45				
Asn	Phe	Leu	Glu	Ser	Val	Lys	Tyr	Val	Gln	Ser	Asn	Gly	Gly	Ala	Ile	
	50					55					60					
Asn	His	Leu	Ser	Asp	Leu	Ser	Leu	Asp	Glu	Phe	Lys	Asn	Arg	Phe	Leu	
65					70				75					80		
Met	Ser	Ala	Glu	Ala	Phe	Glu	His	Leu	Lys	Thr	Gln	Phe	Asp	Leu	Asn	
			85					90					95			
Ala	Glu	Thr	Asn	Ala	Cys	Ser	Ile	Asn	Gly	Asn	Ala	Pro	Ala	Glu	Ile	
			100					105					110			
Asp	Leu	Arg	Gln	Met	Arg	Thr	Val	Thr	Pro	Ile	Arg	Met	Gln	Gly	Gly	
		115					120					125				
Cys	Gly	Ser	Ala	Trp	Ala	Phe	Ser	Gly	Val	Ala	Ala	Thr	Glu	Ser	Ala	
	130					135					140					
Tyr	Leu	Ala	Tyr	Arg	Asn	Gln	Ser	Leu	Asp	Leu	Ala	Glu	Gln	Glu	Leu	
145					150				155					160		
Val	Asp	Cys	Ala	Ser	Gln	His	Gly	Cys	His	Gly	Asp	Thr	Ile	Pro	Arg	
			165					170					175			
Gly	Ile	Glu	Tyr	Ile	Gln	His	Asn	Gly	Val	Val	Gln	Glu	Ser	Tyr	Tyr	
	180							185					190			
Arg	Tyr	Val	Ala	Arg	Glu	Gln	Ser	Cys	Arg	Arg	Pro	Asn	Ala	Gln	Arg	
	195						200					205				
Phe	Gly	Ile	Ser	Asn	Tyr	Cys	Gln	Ile	Tyr	Pro	Pro	Asn	Val	Asn	Lys	
	210					215					220					
Ile	Arg	Glu	Ala	Leu	Ala	Gln	Thr	His	Ser	Ala	Ile	Ala	Val	Ile	Ile	
225					230				235					240		
Gly	Ile	Lys	Asp	Leu	Asp	Ala	Phe	Arg	His	Tyr	Asp	Gly	Arg	Thr	Ile	

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Ile	Gln	Arg	Asp	245	Asn	Gly	Tyr	Gln	Pro	250	Asn	Tyr	His	Ala	Val	255	Asn	Ile
Val	Gly	Tyr	260	Ser	Asn	Ala	Gln	Gly	265	Val	Asp	Tyr	Trp	Ile	270	Val	Arg	Asn
Ser	Trp	Asp	275	Thr	Asn	Trp	Gly	280	Asn	Gly	Tyr	Gly	Tyr	Phe	Ala	Ala		
Asn	Ile	Asp	290	Leu	Met	Met	295	Ile	Glu	Glu	Tyr	Pro	300	Tyr	Val	Val	Ile	Leu
305					310						315						320	

<210> 2
 <211> 272
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Recombinant mutant Der p1 including pre-protein

Met	Lys	Ile	Val	Leu	Ala	Ile	Ala	Ser	Leu	Leu	Ala	Leu	Ser	Ala	Val			
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Tyr	Ala	Arg	Pro	Ser	Ser	Ile	Lys	Thr	Phe	Glu	Glu	Tyr	Lys	Lys	Ala			
			20					25					30					
Phe	Asn	Lys	Ser	Tyr	Ala	Thr	Phe	Glu	Asp	Glu	Glu	Ala	Ala	Arg	Lys			
		35					40					45						
Asn	Phe	Leu	Glu	Ser	Val	Lys	Tyr	Val	Gln	Ser	Asn	Gly	Gly	Ala	Ile			
	50					55					60							
Asn	His	Leu	Ser	Asp	Leu	Ser	Leu	Asp	Glu	Phe	Lys	Asn	Arg	Phe	Leu			
65					70					75				80				
Met	Ser	Ala	Glu	Ala	Phe	Glu	His	Leu	Lys	Thr	Gln	Phe	Asp	Leu	Asn			
				85					90					95				
Ala	Cys	Ser	Ile	Asn	Gly	Asn	Ala	Pro	Ala	Glu	Ile	Asp	Leu	Arg	Gln			
			100					105					110					
Met	Arg	Thr	Val	Thr	Pro	Ile	Arg	Met	Gln	Gly	Gly	Cys	Gly	Ser	Cys			
		115					120					125						
Trp	Ala	Phe	Ser	Gly	Val	Ala	Ala	Thr	Glu	Ser	Ala	Tyr	Leu	Ala	Tyr			
	130					135					140							
Arg	Asn	Gln	Ser	Leu	Asp	Leu	Ala	Glu	Gln	Glu	Leu	Val	Asp	Cys	Ala			
145					150					155				160				
Ser	Gln	His	Gly	Cys	His	Gly	Asp	Thr	Ile	Pro	Arg	Gly	Ile	Glu	Tyr			
			165						170					175				
Ile	Gln	His	Asn	Gly	Val	Val	Gln	Glu	Ser	Tyr	Tyr	Arg	Tyr	Val	Ala			
		180						185					190					
Arg	Glu	Gln	Ser	Cys	Arg	Arg	Pro	Asn	Ala	Gln	Arg	Phe	Gly	Ile	Ser			
		195					200					205						
Asn	Tyr	Cys	Gln	Ile	Tyr	Pro	Pro	Asn	Val	Asn	Lys	Ile	Arg	Glu	Ala			
	210					215					220							
Leu	Ala	Gln	Thr	His	Ser	Ala	Ile	Ala	Val	Ile	Ile	Gly	Ile	Lys	Asp			
225					230					235				240				
Leu	Asp	Ala	Phe	Arg	His	Tyr	Asp	Gly	Arg	Thr	Ile	Ile	Gln	Arg	Asp			
			245						250					255				
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			260					265					270					

<210> 3
 <211> 320
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Recombinant mutant Der p1 including pre-protein -
 His 268 to Ala 268

Met	Lys	Ile	Val	Leu	Ala	Ile	Ala	Ser	Leu	Leu	Ala	Leu	Ser	Ala	Val			
1				5					10					15				

SEQLIST.TXT

Tyr Ala Arg Pro Ser Ser Ile Lys Thr Phe Glu Glu Tyr Lys Lys Ala
 20 25 30
 Phe Asn Lys Ser Tyr Ala Thr Phe Glu Asp Glu Glu Ala Ala Arg Lys
 35 40 45
 Asn Phe Leu Glu Ser Val Lys Tyr Val Gln Ser Asn Gly Gly Ala Ile
 50 55 60
 Asn His Leu Ser Asp Leu Ser Leu Asp Glu Phe Lys Asn Arg Phe Leu
 65 70 75 80
 Met Ser Ala Glu Ala Phe Glu His Leu Lys Thr Gln Phe Asp Leu Asn
 85 90 95
 Ala Glu Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile
 100 105 110
 Asp Leu Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly
 115 120 125
 Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala
 130 135 140
 Tyr Leu Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu
 145 150 155 160
 Val Asp Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg
 165 170 175
 Gly Ile Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr
 180 185 190
 Arg Tyr Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg
 195 200 205
 Phe Gly Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys
 210 215 220
 Ile Arg Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile
 225 230 235 240
 Gly Ile Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile
 245 250 255
 Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn Tyr Ala Ala Val Asn Ile
 260 265 270
 Val Gly Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn
 275 280 285
 Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala
 290 295 300
 Asn Ile Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
 305 310 315 320

<210> 4
 <211> 339
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Recombinant mutant Der p1 encoded by pNIV4842

<400> 4
 Met Leu Leu Val Asn Gln Ser His Gln Gly Phe Asn Lys Glu His Thr
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 Ser Lys Met Val Ser Ala Ile Val Leu Tyr Val Leu Leu Ala Ala Ala
 20 25 30
 Ala His Ser Ala Phe Ala Ala Asp Pro Arg Pro Ser Ser Ile Lys Thr
 35 40 45
 Phe Glu Glu Tyr Lys Lys Ala Phe Asn Lys Ser Tyr Ala Thr Phe Glu
 50 55 60
 Asp Glu Glu Ala Ala Arg Lys Asn Phe Leu Glu Ser Val Lys Tyr Val
 65 70 75 80
 Gln Ser Asn Gly Gly Ala Ile Asn His Leu Ser Asp Leu Ser Leu Asp
 85 90 95
 Glu Phe Lys Asn Arg Phe Leu Met Ser Ala Glu Ala Phe Glu His Leu
 100 105 110
 Lys Thr Gln Phe Asp Leu Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro
 115 120 125
 Ala Glu Ile Asp Leu Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met
 130 135 140
 Gln Gly Gly Cys Gly Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr

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145      150      155      160
Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu
165      170      175
Gln Glu Leu Val Asp Cys Ala Ser Gln His Gly Cys His Gly Asp Thr
180      185      190
Ile Pro Arg Gly Ile Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu
195      200      205
Ser Tyr Tyr Arg Tyr Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn
210      215      220
Ala Gln Arg Phe Gly Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn
225      230      235      240
Ala Asn Lys Ile Arg Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala
245      250      255
Val Ile Ile Gly Ile Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly
260      265      270
Arg Thr Ile Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala
275      280      285
Val Asn Ile Val Gly Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile
290      295      300
Val Arg Asn Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr
305      310      315      320
Phe Ala Ala Asn Ile Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val
325      330      335
Val Ile Leu

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<210> 5
 <211> 343
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Recombinant mutant Der p1 encoded by pNIV4843

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<400> 5
Met Leu Leu Val Asn Gln Ser His Gln Gly Phe Asn Lys Glu His Thr
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Ser Lys Met Val Ser Ala Ile Val Leu Tyr Val Leu Leu Ala Ala Ala
20      25      30
Ala His Ser Ala Phe Ala Ala Asp Pro Arg Pro Ser Ser Ile Lys Thr
35      40      45
Phe Glu Glu Tyr Lys Lys Ala Phe Asn Lys Ser Tyr Ala Thr Phe Glu
50      55      60
Asp Glu Glu Ala Ala Arg Lys Asn Phe Leu Glu Ser Val Lys Tyr Val
65      70      75      80
Gln Ser Asn Gly Gly Ala Ile Asn His Leu Ser Asp Leu Ser Leu Asp
85      90      95
Glu Phe Lys Asn Arg Phe Leu Met Ser Ala Glu Ala Phe Glu His Leu
100      105      110
Lys Thr Gln Phe Asp Leu Asn Ala Glu Thr Asn Ala Cys Ser Ile Asn
115      120      125
Gly Asn Ala Pro Ala Glu Ile Asp Leu Arg Gln Met Arg Thr Val Thr
130      135      140
Pro Ile Arg Met Gln Gly Gly Cys Gly Ser Ala Trp Ala Phe Ser Gly
145      150      155      160
Val Ala Ala Thr Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Gln Ser Leu
165      170      175
Asp Leu Ala Glu Gln Glu Leu Val Asp Cys Ala Ser Gln His Gly Cys
180      185      190
His Gly Asp Thr Ile Pro Arg Gly Ile Glu Tyr Ile Gln His Asn Gly
195      200      205
Val Val Gln Glu Ser Tyr Tyr Arg Tyr Val Ala Arg Glu Gln Ser Cys
210      215      220
Arg Arg Pro Asn Ala Gln Arg Phe Gly Ile Ser Asn Tyr Cys Gln Ile
225      230      235      240
Tyr Pro Pro Asn Ala Asn Lys Ile Arg Glu Ala Leu Ala Gln Thr His
245      250      255

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SEQLIST.TXT

Ser Ala Ile Ala Val Ile Ile Gly Ile Lys Asp Leu Asp Ala Phe Arg
 260 265 270
 His Tyr Asp Gly Arg Thr Ile Ile Gln Arg Asp Asn Gly Tyr Gln Pro
 275 280 285
 Asn Tyr His Ala Val Asn Ile Val Gly Tyr Ser Asn Ala Gln Gly Val
 290 295 300
 Asp Tyr Trp Ile Val Arg Asn Ser Trp Asp Thr Asn Trp Gly Asp Asn
 305 310 315 320
 Gly Tyr Gly Tyr Phe Ala Ala Asn Ile Asp Leu Met Met Ile Glu Glu
 325 330 335
 Tyr Pro Tyr Val Val Ile Leu
 340

<210> 6
 <211> 963
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence encoding recombinant mutant
 Der p1 - Cys 132 to Ala 132

<400> 6
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 tcatcgatca aaacttttga agaatacaaa aaagccttca acaaaaagtta tgctaccttc 120
 gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaatt 180
 ggaggtgccca tcaaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240
 atgagtgcag aagcttttga acacctcaaa actcaattcg atttgaatgc tgaaactaac 300
 gcctgcagta tcaatggaaa tgctccagct gaaatcgatt tgcgacaaat gcgaactgtc 360
 actcccatc gtatgcaagg aggctgtggt tcagcttggg ctttctctg tgttgccgca 420
 actgaatcag cttatttggc ttaccgtaat caatcattgg atcttgctga acaagaatta 480
 gtcgattgtg cttcccaaca cggttgtcat ggtgatacca ttccacgtgg tattgaatac 540
 atccaacata atggtgtcgt ccaagaaagc tactatcgat acggtgcacg agaacaatca 600
 tgccgacgac caaatgcaca acgtttcggg atctcaaact attgccaaat ttaccacaca 660
 aatgtaaaaca aaattcgtga agctttggct caaaccaca gcgctattgc cgtcattatt 720
 ggcatacaag atttagacgc attccgtcat tatgatggcc gaacaatcat tcaacgcgat 780
 aatggttacc aaccaaacta tcacgctgtc aacattgttg gttacagtaa cgcacaaggt 840
 gtcgattatt ggatcgtagc aaacagttgg gataccaatt ggggtgataa tgggttacgg 900
 tattttgctg ccaacatcga tttgatgatg attgaagaat atccatatgt tgtcattctc 960
 taa 963

<210> 7
 <211> 951
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence encoding recombinant mutant
 Der p1 - NAET deletion

<400> 7
 atgaaaattg ttttggccat cgcctcattg ttggcattga gcgctgttta tgctcgtcca 60
 tcatcgatca aaacttttga agaatacaaa aaagccttca acaaaaagtta tgctaccttc 120
 gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaatt 180
 ggaggtgccca tcaaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240
 atgagtgcag aagcttttga acacctcaaa actcaattcg atttgaacgc ctgcagtatc 300
 aatggaaaatg ctccagctga aatcgatttg cgacaaatgc gaactgtcac tcccattcgt 360
 atgcaaggag gctgtggttc atgttgggtg ttctctggtg ttgccgcaac tgaatcagct 420
 tatttggctt accgtaatca atcattggat cttgctgaac aagaattagt cgatttgtct 480
 tccaacacg gttgtcatgg tgataccatt ccacgtggta ttgaatacat ccaacataat 540
 ggtgtcgtcc aagaaagcta ctatcgatac gttgcacgag aacaatcatg ccgacgacca 600
 aatgcacaac gtttcgggat ctcaaactat tgccaaattt accccacaaa tgtaaacaaa 660
 attcgtgaag ctttggctca aaccacagc gctattggcc tcattattgg catcaaagat 720
 ttagacgcat tccgtcatta tgatggccga acaatcattc aacgcgataa tgggttacaa 780
 ccaaaactatc acgctgtcaa cattgttggg tacagtaacg cacaagggtg cgattattgg 840
 atcgtacgaa acagttggga taccaattgg ggtgataatg gttacggtta ttttgctgcc 900
 aacatcgatt tgatgatgat tgaagaatat ccatatgttg tcattctcta a 951

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<210> 8
 <211> 963
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence encoding recombinant mutant
 Der p1 - His 268 to Ala 268

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<400> 8
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tcatcgatca aaacttttga agaatacaaa aaagccttca acaaaaagtta tgctaccttc 120
gaagatgaag aagctgcccg taaaaacttt ttggaatcag taaaatatgt tcaatcaaatt 180
ggaggtgcca tcaaccattt gtccgatttg tcgttggatg aattcaaaaa ccgatttttg 240
atgagtgtag aagcttttga acacctcaaa actcaattcg atttgaatgc tgaaactaac 300
gcctgcagta tcaatggaaa tgctccagct gaaatcgatt tgcgacaaat gcgaactgtc 360
actcccattc gtatgcaagg aggcgtgtgg tcatgttggg ctttctctgg ttttgccgca 420
actgaatcag cttatttggc ttaccgtaat caatcattgg atcttgctga acaagaatta 480
gtcgaatttg cttcccaaca cggttgtcat ggtgatacca ttccacgtgg tattgaatac 540
atccaacata atggtgtcgt ccaagaaagc tactatcgat acgttgacag agaacaatca 600
tgccgacgac caaatgcaca acgtttcggt atctcaaact attgccaaat ttaccacca 660
aatgtaaaaca aaattcgtga agctttggct caaaccaca gcgctattgc cgtcattatt 720
ggcatcaaag atttagacgc attccgtcat tatgatggcc gaacaatcat tcaacgcgat 780
aatggttacc aaccaaacta tgctgctgtc aacattgttg gttacagtaa cgcacaagg 840
gtcgaattatt ggatcgtacg aaacagttgg gataccaatt ggggtgataa tggttacgg 900
tattttgctg ccaacatcga tttgatgatg attgaagaat atccatatgt tgtcattctc 960
taa
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<210> 9
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> XhoI-PstI oligonucleotide

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<400> 9
tcgagaaaag agaggctgaa gctactaacg cctgca 36
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<210> 10
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> XhoI-PstI oligonucleotide

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<400> 10
ggcgttagta gcttcagcct ctcttttc 28
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<210> 11
 <211> 86
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> BamHI-PstI oligonucleotide

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<400> 11
gatccaaacg atgagatttc cttcaatttt tactgcagtt ttattcgcag catcctccgc 60
attagctgct ccaactaacg cctgca 86
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<210> 12
 <211> 78
 <212> DNA
 <213> Artificial Sequence

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<220>
 <223> BamHI-PstI oligonucleotide

<400> 12
 ggcgttagtt ggagcagcta atgcggagga tgctgcgaat aaaactgcag taaaaattga 60
 aggaaatctc atcgtttg 78

<210> 13
 <211> 74
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> oligonucleotide allowing the NAET deletion

<400> 13
 aattcaaaaa ccgatttttg atgagtgagc aagcttttga acacctaaaa ctcaattcga 60
 ttgaaacgcc tgca 74

<210> 14
 <211> 66
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> oligonucleotide allowing the NAET deletion

<400> 14
 ggcgttcaaa tcgaattgag ttttgaggtg ttcaaaagct tctgcatcat caaaaatcgg 60
 tttttg 66

<210> 15
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> RT-PCR primer

<400> 15
 catgaaaatt gttttggcca tcgcc 25

<210> 16
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> RT-PCR primer

<400> 16
 cggtttttga attcatccaa cgac 24

<210> 17
 <211> 113
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> AseI-TfiI synthetic fragment

<400> 17
 taatggaaat gctccagctg aaatcgattt gcgacaaatg cgaactgtca ctcccattcg 60
 tatgcaagga ggctgtgggt cagcttgggc tttctctggt gttgccgcaa ctg 113

<210> 18
 <211> 114
 <212> DNA

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<213> Artificial Sequence

<220>

<223> AseI-TfiI synthetic fragment

<400> 18

attcagttgc ggcaacacca gagaaagccc aagctgaacc acagcctcct tgcatacgaa 60
tgggagtgc agttcgcatt tgtcgcaaat cgatttcagc tggagcattt ccat 114

<210> 19

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide allowing the NAET deletion

<400> 19

aattcaaaaa ccgatttttg atgagtgcag aagcttttga acacctcaaa actcaattcg 60
atttgaacgc ctgca 75

<210> 20

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide allowing the NAET deletion

<400> 20

ggcgttcaaa tcgaattgag ttttgaggtg ttcaaaagct tctgcactca tcaaaaatcg 60
gtttttg 67

<210> 21

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> RT-PCR primer

<400> 21

catgaaaatt gttttggcca tcgcc 25

<210> 22

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> RT-PCR primer

<400> 22

cggtttttga attcatccaa cgac 24

<210> 23

<211> 78

<212> DNA

<213> Artificial Sequence

<220>

<223> HindIII-PstI oligonucleotide

<400> 23

agcttaccat gaaaattggt ttggccatcg cctcattggt ggcattgagc gctgtttatg 60
ctcgtactaa gcctgca 78

<210> 24

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<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> HindIII-PstI oligonucleotide

<400> 24
ggcgttagta cgagcataaa cagcgtcaa tgccaacaat gaggcgatgg ccaaaacaat 60
tttcatgta                                     70

<210> 25
<211> 172
<212> DNA
<213> Artificial Sequence

<220>
<223> BamHI-EcoRI 172 bp synthetic fragment

<400> 25
gatccccggc cgatcatgat caaaactttt gaagaatata aaaaagcctt caacaaaagt 60
tatgctacct tcgaagatga agaagctgcc cgtaaaaact ttttggaatc agtaaaatat 120
gttcaatcaa atggagggtgc catcaaccat ttgtccgatt tgtcgttgga tg          172

<210> 26
<211> 172
<212> DNA
<213> Artificial Sequence

<220>
<223> BamHI-EcoRI 172 bp synthetic fragment
        complementary sequence

<400> 26
aattcatcca acgacaaatc ggacaaatgg ttgatggcac ctccatttga ttgaacatat 60
tttactgatt ccaaaaagtt tttacgggca gcttcttcat cttcgaagg agcataactt 120
ttgttgaagg cttttttgta ttcttcaaaa gttttgatcg atgacggccg gg          172

<210> 27
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> 98023 oligonucleotide

<400> 27
gtacccttaa gatgcta                                     17

<210> 28
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> 98024 oligonucleotide

<400> 28
ctagtagcat cttaagg                                     17

<210> 29
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> 98136 oligonucleotide

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<400> 29
aattcaaaaa ccgatttttg atgagtgcag aagcttttga acacctcaaa actcaattcg 60
atttgaacgc ctgca 75

<210> 30
<211> 67
<212> DNA
<213> Artificial Sequence

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<223> 98137 oligonucleotide

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